



Nanotechnology, Renewable  
Energy & Sustainability

**September 19, 2014**  
**Nanyang Hotel, Xi'an, China**

# **2<sup>nd</sup> International Workshop on Nanotechnology, Renewable Energy & Sustainability**

*organised by the International Research Center for Renewable Energy,  
State Key Laboratory of Multiphase Flow in Power Engineering,  
School of Energy & Power Engineering,  
Xi'an Jiao Tong University*

The societal transition from a fossil fuel-based present to a clean and renewable future relies on the widespread implementation of sustainability in our industries and lifestyles. For instance, the efficient generation of renewable fuels such as hydrogen, bioethanol, cellulosic biofuel, and biomass-based diesel as well as water and food managements are crucial to ensure a sustainable future where industrial development becomes respectful of the environment and biodiversity. However, the high cost of energy production and relatively low efficiency of current technologies pose an intrinsic limitation. The necessity of developing novel materials that overcome their intrinsic theoretical limits by changing the fundamental underlying physics and chemistry while keeping the fabrication cost and environmental footprint to a minimum is crucial. (R)evolutionary concerted development is required to achieve the necessary increase in efficiency and significant decrease in materials cost and environmental and health negative impact. Research and development exploiting nanotechnology has the greatest potential to efficiently contribute to such essential goals, for instance, by discovering processes that are ecological and enhance energy and resource efficiencies. Indeed, the creation of new devices with better performance and improved stability achieved by nanoscale materials design and control using unique phenomena such as quantum confinement effects and, just as important, better fundamental knowledge and comprehensive understanding of the structure-property relationships is the key to success.



## TOPICS

The aim of this workshop is to offer a forum of knowledge and discussion for students, scientists, engineers, industrials and professionals involved in nanotechnology R&D for Energy and the Environment for a sustainable future. The topics will **include**:

- Green design and recyclability of nanomaterials and devices
- Ecological and energy-efficient processing of advanced nanostructures
- Nanomaterials for renewable fuels and energy
- Nanotechnology for sustainability in healthcare
- Nanodevices for cost-effective solid state lighting
- Nanotechnology for water purification and desalinisation
- Nanocatalysts for carbon dioxide capture and utilization
- Advances in nanosensors for atmospheric and environmental monitoring
- Industrial production, implementation and commercialization of sustainable systems
- Societal, educational, environmental and economic aspects of sustainability

## KEYNOTE SPEAKERS

- **Artur Braun**, EMPA, Switzerland
- **Elhadj Dogheche**, IEMN, France
- **Mohamed Eddaoudi**, KAUST, Saudi Arabia
- **Saif Haque**, Imperial College London, UK
- **Hossein Hosseinkhani**, NTUST, Taiwan
- **Chennupati Jagadish**, ANU, Australia
- **Il-Doo Kim**, KAIST, Korea
- **Malik Maaza**, iThemba Labs, South Africa
- **Samuel Mao**, UC Berkeley, USA
- **Riad Nechache**, INRS, Canada
- **Clas Persson**, Univ. Oslo, Norway
- **Federico Rosei**, Univ. du Quebec, Canada
- **Shufang Wang**, Hebei Univ., China
- **Gunnar Westin**, Uppsala Univ., Sweden
- **Shihe Yang**, HKUST, China

## ORGANIZING COMMITTEE

**L. Vayssieres**, Xi'an Jiaotong Univ., *Chairman*

**L. Guo**, Xi'an Jiaotong Univ., *Co-chairman*

## ADVISORY COMMITTEE

- A. Chemseddine, Humboldt Institute, Germany
- J.F. Feller, Univ. Bretagne Sud, France
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- S. Islam, UC Davis, USA
- S. Mathur, Univ. Cologne, Germany
- X.W. Sun, NTU, Singapore
- Y. Tachibana, RMIT, Australia

## WORKSHOP LOCATION

The workshop will be held on September 19, 2014 at Nanyang Hotel a short walking distance to Xi'an Jiao Tong University and few minutes from the famous Big Wild Goose Pagoda, Xi'an.



# PROGRAM

08:15-08:30 **Opening Remarks, Prof. Lionel Vayssieres,**  
International Research Center for Renewable Energy,  
Xi'an Jiao Tong University, Xi'an, China

08:30-09:00 **Dr. Artur Braun**  
Laboratory for High Performance Ceramics  
Swiss Federal Laboratories for Materials Science & Technology (EMPA)  
Dübendorf, Switzerland  
2015 Spring Materials Research Society co-chair

09:00-09:30 **Prof. Chennupati Jagadish**  
Distinguished Professor & Australian Laureate Fellow, FAA, FTSE  
Department of Electronic Materials Engineering  
Australian National University, Canberra, Australia  
Vice-President & Secretary Physical Sciences,  
Australian Academy of Science  
Director (ACT node), Australian National Fabrication Facility  
Convener, Australian Nanotechnology Network

09:30-10:00 **Prof. Shihe Yang**  
Department of Chemistry,  
Hong Kong University of Science and Technology, Hong Kong, China

10:00-10:30 **Prof. Saif Haque**  
Department of Chemistry, Faculty of Natural Sciences  
Imperial College London, London, UK

10:30-11:00 **Group photo & Tea break**

11:00-11:30 **Prof. Elhadj Dogheche**  
Institute of Electronic Microelectronic & Nanotechnology IEMN  
CNRS UMR 8520, Lille and University of Valenciennes & Hainaut  
Cambrésis, France

11:30-12:00 **Prof. Gunnar Westin**  
Chemistry-Angstrom, Uppsala University, Uppsala, Sweden  
Director for Division Research & Chief Scientist,  
International Research Center for Renewable Energy, China

12:00-12:30 **Prof. Hossein Hosseinkhani**  
Taiwan University of Science and Technology, Taipei, China  
President, Founder & CEO, Matrix, Inc. Taipei, China

12:30-13:45 **Lunch break**

# PROGRAM

14:00-14:30 **Prof. Samuel Mao**  
Department of Mechanical Engineering,  
University of California, Berkeley, USA  
Institute of New Energy, Shenzhen, China

14:30-15:00 **Prof. Clas Persson**  
Deputy Head Research  
Department of Physics, University of Oslo, Oslo, Norway  
Department of Materials Science & Engineering,  
Royal Institute of Technology, Stockholm, Sweden

15:00-15:30 **Dr. Riad Nechache**  
Energy, Materials and Telecommunications (EMT),  
Institute National de Recherche Scientifique, Montreal, Canada

15:30-16:00 **Tea break**

16:00-16:30 **Prof. Shufang Wang**  
College of Physics Science & Technology, Hebei University,  
Baoding, China  
Associate Dean, College of Physics Science & Technology

16:30-17:00 **Prof. Il-Doo Kim**  
Department of Materials Science and Engineering,  
Korean Advanced Institute of Science & Technology (KAIST),  
Seoul, Korea  
Deputy Editor, Journal of Electroceramics

17:00-17:30 **Prof. Federico Rosei**  
FAAAS, FRSC(UK), FInstP, FIMMM, FIET, SMIEEE, MGYA, FIoN,  
FEIC, FAIP, SMSPIE, Member of the European Academy of Sciences,  
UNESCO Chair in Materials and Technologies for Energy Conversion,  
Saving and Storage and Canada Research Chair in  
Nanostructured Organic and Inorganic Materials  
Director, Institut National Recherche Scientifique-EMT,  
Univ. du Quebec, Varennes, Canada

17:30-18:00 **Prof. Mohamed Eddaoudi**  
Functional Materials Design, Discovery & Development (FMD<sup>3</sup>) Lab  
Physical Sciences & Engineering Division  
King Abdullah University of Science and Technology (KAUST)  
Associate Director, Advanced Membranes and Porous Materials  
Research Center

18:00-18:30 **Prof. Malik Maaza**  
UNESCO UNISAAFRICA Chair in Nanosciences/Nanotechnology  
Fellow of the African Academy of Sciences, the New York Academy  
of Sciences, the Islamic World Academy of Sciences  
Africa-International Desk, iThemba LABS-NRF,  
Western Cape, South Africa